

REMARKS

This Amendment responds to the Office Action dated June 30, 2006 in which the Examiner rejected claims 1, 8 and 11 under 35 U.S.C. §103.

Claim 1 claims a head slider with a precise positioning actuator, comprising a thin plane shaped head section and an actuator section. The thin plane shaped head section is provided with a first surface that is substantially perpendicular to an air bearing surface of the head slider, a second surface opposite to the first surface, side surfaces perpendicular to the first and second surfaces, and at least one head element formed on the first surface. The actuator section is for precisely positioning the at least one head element. The actuator section includes a) a pair of movable arms, b) a base to be fixed to a support means of the head slider; the pair of movable arms extending from the base, and c) a static part coupled with the base and formed between and spaced from the pair of movable arms. Each movable arm comprising an arm member made of zirconia and a piezoelectric element formed on or fixed to a surface of the arm member.

Through the structure of the claimed invention, a) having a base fixed to a support means of a head slider, b) a pair of movable arms extending from the base along the air bearing surface, c) a static part coupled with the base and formed between and spaced from the pair of movable arms and d) an arm member made of zirconia as claimed in claim 1, the claimed invention provides a head slider with a precision positioning actuator in which no displacement will occur at the air bearing surface formed on the static part of the actuator section so that the attitude of the air bearing surface will not change in order to keep a stable flying characteristic of the

slider. The prior art does not show, teach or suggest the invention as claimed in claim 1.

Claims 1, 8 and 11 were rejected under 35 U.S.C. §103 as being unpatentable over *Yanagisawa* (U.S. Patent 6,487,045) in view of *Novotny* (U.S. Patent 6,289,564).

Applicants respectfully traverse the Examiner's rejection of the claims under 35 U.S.C. §103. The claims have been reviewed in light of the Office Action, and for reasons which will be set forth below, Applicants respectfully request the Examiner withdraws the rejection to the claims and allows the claims to issue.

Yanagisawa merely discloses a slider substrate 11, floating plane 13 formed on the surface of slider surface 11, a piezoelectric element 14 sandwiched by electrodes 15a and 15b and a recording/reproducing element 12. (Column 8, lines 39-47).

Thus, nothing in *Yanagisawa* shows, teaches or suggests a) a base to be fixed to a support means of a head slider, b) a pair of movable arms extending from the base along the air bearing surface, c) a static part coupled with the base and formed between and spaced from the pair of movable arms and d) each movable arm comprising one 1) an arm member made of zirconia and 2) a piezoelectric element formed on or fixed to a surface of the arm member as claimed in claim 1.

Novotny appears to disclose in FIG. 2 a top view and FIG. 3 is a side view of slider 24 including piezoelectric microactuator 42a and structural element 42b to enable high resolution positioning of head 41. Slider 24 includes a head portion 40 carrying transducing head 41 and also includes air gap or space 44 between head portion 40 of slider 24 and the remaining portion of slider 24. Microactuator 42a and

structural element 42b are disposed on the side surfaces of slider 24 near its distal end, connecting head portion 40 to the remainder of slider 24. Microactuator 42a is a structural element operable as a bendable cantilever to alter the position of head portion 40 with respect to main portion 38. (Column 3, lines 42-54). FIG. 5 is an enlarged top view of the distal portion of slider 24 illustrating the construction of piezoelectric microactuator 42a. (Column 4, lines 22-24). Structural layer 60 is composed of silicon nitride (Si_3N_4) or polysilicon. Buffer layer 62 is preferably composed of silicon dioxide (SiO_2) or titanium dioxide (TiO_2). Adhesive layer 64 is preferably composed of titanium (Ti) or tantalum (Ta). Bottom electrode 66, shared electrode 70 and top electrode 74 are preferably formed of platinum (Pt). Piezoelectric elements 68 and 72 may be composed of zinc oxide (ZnO), lead zirconium titanate ($PbZrTiO_3$, known as PZT), aluminum nitride (AlN) or polyvinylidene fluoride (PVDF). (Column 4, lines 39-48).

Thus, *Novotny* merely discloses an air gap or space 44 formed between head portion 40 of slider 24 and the remaining portion of slider 24. Nothing in *Novotny* shows, teaches or suggests a static part coupled with the base as claimed in claim 1. Rather, an air gap cannot be coupled, but merely exists between two elements. Thus, nothing in *Novotny* shows, teaches or suggests a static part coupled with the base.

Furthermore, since air gap or space 44 in *Novotny* is provided between the head portion of the slider 40 and the remaining portion of the slider 24, nothing in *Novotny* shows, teaches or suggests a static part formed between movable arms with spaces (i.e., a static part formed between and spaced from the pair of movable arms) as claimed in claim 1. In other words, although the air gap exists between the

arms 42a, 42b of *Novotny*, since it is an air gap it extends totally between the arms and thus is not spaced from the arms.

Furthermore, *Novotny* merely discloses in Figure 5 the structure of the microactuator 42a including a structural layer 60 composed of silicon nitrate or polysilicon, a buffer layer 62 of silicon dioxide or titanium dioxide, an adhesive layer 64 composed of titanium or tantalum, bottom electrode 66, shared electrode 70 and top electrode 74 formed of platinum and piezoelectric elements 68 and 72 composed of zinc oxide, PZT, aluminum nitride or PVDF. Thus, nothing in *Novotny* shows, teaches or suggests an arm member made of zirconia and a piezoelectric element formed on or fixed to a surface of the arm member as claimed in claim 1. In other words, although in *Novotny* piezoelectric elements 68, 72 are disclosed, they are not formed on an arm member of zirconia. Rather, the arm of *Novotny* of layers 60, 62, 64, 66, 70 and 74 contains no zirconium. Applicants respectfully submit that lead zirconium titrate is a piezoelectric crystal and is used for layers 68 and 72. However, nothing in *Novotny* shows, teaches or suggests that the structural layers 60, 62, 64, 66, 70 and 74 are made of zirconium.

Finally, Applicants respectfully submit that nothing in *Novotny* shows, teaches or suggests a base to be fixed to a support means of a head slider and movable arms extending from the base along the air bearing surface as claimed in claim 1.

Since nothing in *Yanagisawa* or *Novotny* show, teach or suggest the primary features as discussed above, Applicants respectfully request the Examiner withdraws the rejection to claim 1 under 35 U.S.C. §103.

Claims 8 and 11 depend from claim 1 and recite additional features. Applicants respectfully submit that claims 8 and 11 would not have been obvious

within the meaning of 35 U.S.C. §103 over *Yanagisawa* and *Novotny* at least for the reasons as set forth above with respect to claim 1. Therefore, Applicants respectfully request the Examiner withdraws the rejection to claims 8 and 11 under 35 U.S.C. §103.

New claims 31-37 have been added. Applicants respectfully submit that these claims are also in condition for consideration and allowance.

Thus it now appears that the application is in condition for reconsideration and allowance. Reconsideration and allowance at an early date are respectfully requested.

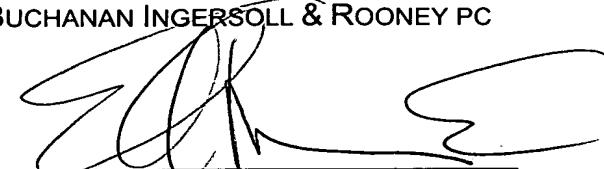
If for any reason the Examiner feels that the application is not now in condition for allowance, the Examiner is requested to contact, by telephone, the Applicants' undersigned attorney at the indicated telephone number to arrange for an interview to expedite the disposition of this case.

In the event that this paper is not timely filed within the currently set shortened statutory period, Applicants respectfully petition for an appropriate extension of time. The fees for such extension of time may be charged to Deposit Account No. 02-4800.

In the event that any additional fees are due with this paper, please charge
our Deposit Account No. 02-4800.

Respectfully submitted,

BUCHANAN INGERSOLL & ROONEY PC



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